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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,172	02/27/2002	Steven Shawn Smith	010886.00670	1372

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EXAMINER

PENDLETON, BRIAN T

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

10/085,172

Applicant(s)

SMITH, STEVEN SHAWN

Examiner

Brian T. Pendleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/5/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the multiple chosen, fixed input beams and multiple desired main beams, claimed in claims 2 and 7 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

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2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 8, 9, 14-16, 18, 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Venkatesh et al, US Patent 6,748,086 (hereinafter referenced as Venkatesh). Venkatesh discloses a cabin communication system in figure 6 comprising transducers 30a-30j, a beamformer comprising weights 56 and summer 58 for producing a fixed input beam output to summer 66, algorithmic block comprising element 60, weights 62, summers 64 and 66 for producing a narrowed on-axis beamwidth and an output signal from summer 66. Claim 1 is met. Regarding claims 3-5, there is a plurality of microphones 30a-30j. As to claim 6, column 6 lines 45-51 disclose that weights 62, summer 64 are used to create signals that point nulls in the directions of B, C and D which effectively narrow beam A when superimposed by summer 66. Per claim 8, adaptive weights 62 inherently include a microprocessor. The adaptive weights are used to steer a null in a certain direction, therefore there existed a program to accomplish that task. Inherently, programs are computer executable instructions that are stored on a medium, meeting claim 9. Regarding claim 14, a desired main beam is determined for the vehicle environment and the desired main beam is narrowed using adaptive weights 62, summer 64 and summer 66. Per claims 15 and 16, column 6 lines 33-37 disclose that

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the desired main beam is determined using engineering design which reads on empirically solving a problem and using mathematical analysis. As to claim 18, the beamformer receives input signals and forms beams 40, 42, 38, 44, and 46 part of beam pattern 36 which is outputted. As to claim 23, adaptive weights 62 inherently include a microprocessor. The adaptive weights are used to steer a null in a certain direction, therefore there existed a program to accomplish that task. Inherently, programs are computer executable instructions that are stored on a medium, meeting claim 24.

4. Claims 14, 19, 20, 25-30 and 36-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Marash et al, US Patent 6,594,367 (hereinafter referenced as Marash). In figure 2, Marash discloses a directional microphone system comprising a plurality of sensors 26₁-26_n, a beamformer 30, reference channel processor 32, beam filters comprising a delay line 34, filter 36 and convolver 38, summer 40 and summer 42. A desired main beam is created by beamformer 30. The desired resulting beamwidth is determined by the estimated noise subtracted from the beam at summer 42. The noise is determined since the beam filters are fixed. The main beam is narrowed by removing the noise that is in an area of the main beam. The desired output beam and output signal are output from summer 42. Claims 14 and 25 are met. As to claims 26-28, see column 6 lines 45-62. Per claims 19, 20, 29 and 30, the delay lines 34, filters 36 and convolvers 38 produce a plurality of cancellation beams which are superimposed with the main beam at summer 42. As to claims 36 and 37, signal conditioning circuit 28 samples the input signal, thereby converting it to a digital signal. The digital signal is processed by beamformer 30 and the other elements, therefore there inherently exists a microprocessor and computer executable instructions and a medium for reading the executable steps.

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Regarding claims 38 and 39, inherently the signal processing is done by a computer with computer executable instructions.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 7, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkatesh. Venkatesh does not disclose multiple desired main beams and narrowed multiple desired main beams. In re Harza 274 F.2d 669, 124 USPQ 378 dictates that no patentable weight be assigned to a duplication of parts. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide multiple desired main beams and narrowing them for the purpose of supplying a plurality of desired signals.

7. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkatesh in view of Ohkubo et al, US Patent 5,862,240 (hereinafter Ohkubo).

Venkatesh does not disclose multiple sound paths to the transducer wherein the multiple sound paths create multiple signals corresponding to the multiple sound paths and wherein the multiple sound paths create a phase shift in the multiple signals. Ohkubo discloses a microphone device in figure 12 having a transducer 25 with multiple sound paths 21, 22, and 23, multiple signals, and with a phase shift among the multiple signals. As disclosed in column 8 line 65 – column 9 line 2, it was possible to create a directional

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signal by using only one microphone. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the microphone device of Ohkubo for the plurality of microphones 30 in Venkatesh for the purpose of picking up sound signals with directionality with less equipment. Claim 10 is met. Per claims 11-13, the sound paths 21-23 meet the limitations.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Venkatesh in view of Marash. Venkatesh does not disclose that the step of determining a location of a desired main is by multidimensional Fourier transforms. Marash discloses the use of multidimensional Fourier transforms to determine the “look” direction main beam. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use the technique of Marash in the invention of Venkatesh for the purpose of providing an improved main beam.

9. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marash. Marash does not disclose multiple desired main beams and narrowed multiple desired main beams. In re Harza 274 F.2d 669, 124 USPQ 378 dictates that no patentable weight be assigned to a duplication of parts. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide multiple desired main beams and narrowing them for the purpose of supplying a plurality of desired signals.

10. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marash in view of Ohkubo. Marash forming beams using a transducer prior to producing a cancellation beam. Ohkubo discloses a microphone device in figure 12 having a transducer 25 with multiple sound paths 21, 22, and 23, multiple signals, and with a phase shift among the multiple signals. The resulting signal is a beam which is created

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using only one transducer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the microphone device of Ohkubo for the plurality of microphones 30 in Marash for the purpose of picking up sound signals with directionality with less equipment. Claim 34 is met. As to claim 35, Marash teaches analog to digital conversion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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